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A NEWS LETTER

Giving information on new developments in the control of plant diseases and crop pests.

Also news on the results of experiments in the field and laboratory by chemists and technical men of the du Pont Company and its subsidiary companies.

We shall be glad to furnish you with articles on subjects in our field written in collaboration with chemical experts for use in local newspapers or other publications, or for radio talks, if you will write us stating what subjects you wish discussed.

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ZINC COMPOUNDS IMPORTANT AS AGRICULTURAL CHEMICALS

The agricultural importance of zinc salts lies in the fact that they have prominent bactericidal and fungicidal properties when applied alone or in combination with other chemicals. The zinc compounds most important in this respect are zinc sulphate and zinc chloride.

CONTROL OF BACTERIAL SPOT ON PEACHES

The most prominent use of zinc sulphate is as a control for bacterial spot, a very serious disease of peaches. This disease is widespread throughout peach growing areas of the world. It was first reported in this country in 1922 and causes annual losses in the peach growing areas of Southern Illinois, Southern Indiana, North and South Carolina. It is also quite destructive in Arkansas, Tennessee, Kentucky, Maryland, Delaware and Virginia. Bacterial spot occurs on the leaves, twigs and fruits and produces characteristic symptoms. If infection is allowed to continue without attempts to control, the tree is completely devitalized by defoliation and is eventually destroyed. During the growing season, the twigs are very often killed and the fruit seriously damaged.

Pathologists of the United States Department of Agriculture in the course of extensive research activities involving work with over two hundred chemicals, found that sprays containing zinc as the essential ingredient were most effective on bacterial spot without injury to the tree, foliage or fruit. Zinc sulphate is applied in the form of a zinc bordeaux, a combination of four pounds zinc sulphate and four pounds of hydrated lime in fifty gallons of water. According to authorities, application of zinc bordeaux should be made at two weeks intervals following petal fall in the early spring.

CONTROL OF PEACH SCAB AND PEACH BROWN ROT

Zinc sulphate is also reported to be a very effective control for mild cases of peach scab and peach brown rot according to the Year Book of Agriculture 1933.

ZINC SULPHATE ALSO USED IN CONTROL OF MOTTLE LEAF OR LITTLE LEAF OF CITRUS

According to recent reports the use of zinc sulphate has spread to the citrus growing areas of California for the control of mottle leaf or little leaf of citrus. In the control of mottle leaf, it is very necessary to improve the condition of the tree. The method followed is to apply zinc sulphate crystals directly to the soil around the citrus tree. Rains or irrigation water are depended on to carry the material to the feeding roots of the tree.

USE OF ZINC CHLORIDE AS A CONTROL FOR FIRE BLIGHT, A DISEASE OF PEARS, QUINCES AND APPLES

Reports from commercial growers of pears, quinces and apples, show that applications of zinc chloride in combination with other chemicals will control a serious bacterial disease, known as Fire Blight. The mixture is applied as a disinfectant to infected areas.

CONTROL OF CUT-WORM AND FLEA BEETLE ON HORSERADISH CROP

CUT-WORM CONTROL

Succulent crops, such as celery and lettuce, are often seriously damaged by various types of cut-worms which attack the plant as soon as the seedling forces its way through the soil. According to authorities, the use of poisonous baits is the practical control for these worms. A practical bait can be prepared by mixing about 25 pounds of red bran with one pound of barium fluosilicate. This mixture should be dampened with about four gallons of water and distributed in the field just before darkness.

CONTROL OF FLEA BEETLE ON HORSERADISH CROP

Control of the flea beetle on the horseradish crop is successful according to reports from H. L. Seaton, Assistant County Agent, St. Louis County, Mo. Explaining the method of control, Mr. Seaton stated: "Cages were made of muslin large enough to cover several plants. The plants were dusted or sprayed with the different materials and muslin was placed over the soil around the plants. The cages were then placed and a large number of insects were caught and put in them. We found that most of the beetles were killed in the cages where we dusted the plants with undiluted barium fluosilicate and where a mixture of one part barium fluosilicate and one part plaster paris was used."

IMPORTANCE OF ULTRA-VIOLET RAYS FOR HEALTHY POULTRY

No discovery has been made in the field of nutrition which has had so far reaching an effect on poultry keeping as the discovery of the ultra-violet rays of sunlight. Science has clearly proved that these rays produce Vitamin D, so necessary to the obtaining of proper calcium and phosphorous metabolism.

Poultry needs this Vitamin more than other kinds of livestock because of the large amount of calcium necessary to keep it healthy and producing eggs. A bird eats approximately one third as much calcium carbonate as it does animal protein in a year. Most of this goes into shell making material, ninety per-cent of the egg shell being calcium carbonate.

The clotting quality of blood is calcium. Bleeding combs and allied troubles through the winter can be attributed to lack of proper calcium metabolism. The Agricultural Experiment Station of Wisconsin found that thin-shelled eggs were related to lack of sunshine. Kansas Agricultural Experiment Station found a relationship between the hatchability of eggs and the amount of direct sunlight.

Poultry in its natural environment lived in a tropical region where sunshine was ever present. The problem is to duplicate this tropical condition as nearly as possible and build poultry houses in such a way as to let in an abundance of the ultra-violet rays. In addition, the house must be kept warm in winter and free from dampness. Ordinary glass does not allow the health giving rays to filter through.

Careful tests made by the United States Bureau of Standards, Department of Commerce, and the New Jersey Agricultural Experiment Station, New Brunswick, N. J., have shown that practically all the health giving rays of the sun pass through Cel-O-Glass. This material also makes a warmer and drier house. Reports from the Washington Experiment Station, Pullman, Washington, stated that during extreme cold weather when the temperature was 16 degrees F. below zero outside the house, the minimum was 28 degrees above inside the house. The report also stated that the Cel-O-Glass made house was much lighter and the restricted ventilation used during the extremely cold weather protected the birds from the cold and held them in high production.

EXPLOSIVES ON THE FARM

BLASTING LIMESTONE

In sections where limestone occurs, outcrops or boulders may be removed by the use of dynamite. Blasting may serve a double purpose by clearing fields of obstructions to make possible the use of farm machinery, and making available the material for use on the farm, after the limestone has been crushed. In most localities where limestone is found, operators of portable crushers move their equipment from farm to farm for crushing work.

THREE BLASTING METHODS

Limestone can be block-holed by drilling holes to receive the dynamite charges. This however, is the slowest of the methods and the most costly, unless the work is extensive enough to warrant the use of power drills.

Boulders can be broken up by mud-capping. For this, the dynamite is removed from the wrapper and the explosive piled in a mound on top of the boulder. A blasting cap with a fuse attached is inserted in the mass of dynamite, and the charge covered with the waterproof wrappers of the cartridges. Then, moist clay or wet soil free of pebbles is heaped on top of the charge and pressed down firmly by hand. If an electric blasting machine is at hand, an electric blasting cap can be used for the primer.

The third method of blasting is known as snake-holing. It consists of digging out underneath or from the side of an outcrop or boulder, to make a cavity to hold the charge of dynamite. With the exception of the primed one, all the cartridges should be slit, but the dynamite should not be removed from the wrapper. After the charge has been placed, the hole should be filled with earth and firmly tamped. Priming may be done with a blasting cap and fuse, or with an electric blasting cap.

SAFETY PRACTICES

Only wooden implements should be used for pushing the dynamite into the hole and for tamping. Metal in contact with rock can cause a spark and result in an accident. Another precaution to be observed in all cases is to have the fuse long enough or the leading wires of the blasting machine sufficiently long to permit the blaster to take a safe distance before the blast. Also, spectators should be made to retire to a safe point. All dynamite -- loose or in a box -- should be moved far enough away before the blast is shot. When using cap and fuse and the blast fails to go off, stay away from it for several hours; the best rule is to keep clear of it until the next day.

IMPORTANCE OF SEED DISINFECTION

Higher prices for farm products do not necessarily mean that the farmer will make sufficient income to permit him to live comfortably, and obtain a reasonable profit. In order to make the profit to which he is entitled, he must be able to produce crops at a minimum cost. There has been much discussion on the use of pure-bred seed, good fertilizer and methods of cultivation. However, there has not been sufficient emphasis on the protection of crops against seed-borne diseases. This protection, which can be secured by an investment of only a few cents per acre for seed treatment is as fundamentally and economically sound as fertilization or cultivation.

As most farmers are well aware, the success or failure of the crop lies to a large extent in the seed that is planted. Pure-bred seed, even without seed treatment, will not necessarily produce a paying crop as the seed may be infected with some dangerous diseases which will so lower the yields as to make the crop unprofitable. The seed may even be disease-free and after being planted, the weather conditions may be such as to cause rot. Seed treatment will prevent, to a large extent, the destruction by disease organisms carried on the surface of the seed and in the soil.

The importance of seed disinfection is readily judged by the great amount of research work and the large number of publications that have been written on the subject. There is hardly a State Experiment Station which employs plant pathologists that does not conduct more than one project a year on seed disinfection.

The Federal Government publishes periodically the Plant Disease Reporter, which reports the devastation caused by plant diseases including those carried by the seed. A survey of the Annual Supplements of the Plant Disease Reporter will reveal that there are thousands of bushels of grain, potatoes, corn, etc., that are lost through the ravages of these diseases.

The returns which can be obtained through the disinfection of seed are almost incredible. For instance, a corn-belt farmer spends approximately three cents for the disinfection of seed corn. According to the Illinois and Iowa Agricultural Experiment Stations' tests with seed corn treatment over a period of six to seven years, it is reasonable to expect an average increase in yield of four bushels to the acre from this practice. Equally satisfactory returns can be obtained by treating seed oats, barley, wheat, potatoes, etc., on equally small investments. This return, of course, does not take into consideration, the added value of crops due to improved quality, which is hard to estimate.
